WWW.ASUMAG.COM
WWW.SCHOOLDESIGNS.COM

SHAPING FACILITIES & BUSINESS DECISIONS

AMERICAN
SCHOOL & UNIVERSITY®

COMMUNICATIONS/OFFICE **SYSTEMS**

35TH ANNUAL **CONSTRUCTION** REPORT

ENERGY-EFFICIENT **LIGHTING**

MAY 2009

BUILT TO LAST

Early sustainable-design strategies have fulfilled and exceeded proponents' expectations.



A PENTON MEDIA PUBLICATION



Green, prudent... and economical.

Eclipse® Warm Air Hand Dryers: Contemporary design. 95% savings compared to paper towels. Eliminates towels, and waste disposal. Hygienic, no-touch operation. Drawn-steel white vitreous enamel or bright-polished chrome-plated cover. Vandal-resistant. Lifecycle economies.





AMERICAN SCHOOL & UNIVERSITY
SHAPING FACILITIES & BUSINESS DECISIONS
VOLUME 81 • MAY 2009 • NUMBER 10

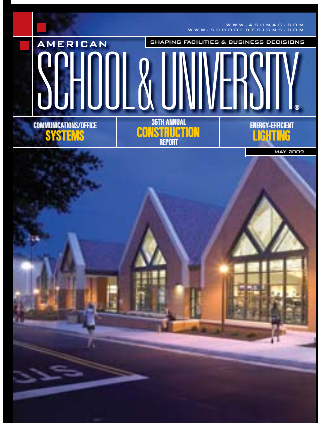
CONTENTS

DEPARTMENTS



Bolingbrook High School, Bolingbrook, Ill.; Architect: Wight & Co.
Photo courtesy of Lambros Photography, Inc.

COVER STORY



On the Cover:
The William and Mary Recreational Sports Center expansion and renovation project at The College of William & Mary, Williamsburg, Va., is the first LEED-certified recreation facility in the Southeast.
Architect: Moseley Architects, PC
Photographer: Steve Maylone

Correction
In the Spring Buyers' Guide & Industry Sourcebook, the correct phone number for EverWhite should be (262)255-4422.

www.ASUmag.com · www.SchoolDesigns.com



PERFORMANCE IS MEASURED BY DEGREES... AND DOLLARS.

up to R24

POST-CONSUMER up to 58 PERCENT POST-INDUSTRIAL

30 DAYS OR LESS*

Performance expectations are no longer limited to a school's occupants. Moving forward, our schools must perform well beyond what was once considered a passing grade. A school built using Fabcon's VersaCore+*Green* wall panels can reduce heating and cooling expenditures by as much as 20% compared to many traditional construction methods—a distinction that might just put your new school on the honor roll. **Contact your Fabcon Sales Engineer, visit www.Fabcon-USA.com or call 877-4-FABCON for more information.**

FABCON®

BETTER, STRONGER, FASTER ...and Greener!

U.S. GREEN BUILDING COUNCIL MEMBER

*VersaCore+Green contains up to 58% post-consumer and post-industrial recycled content by materials value. Most buildings are enclosed within 30 days from first panel delivery. All R-values vary depending on panel specifications and client requirements.

The Big Event

In this difficult economy, schools and universities are being forced to further cut all aspects of operations, with many curtailing continuing education, travel and more. However, the need for knowledge and insight into a complex and changing education landscape is vital for success, and the benefits of knowledge-building and peer networking become even more important.

Understanding this, *American School & University* has brought together industry experts and thought leaders in education facilities, business and operations to help you gain the valuable knowledge and insight you need to stay ahead of the curve. "GREEN School & University Virtual Conference & Expo" is a FREE, day-long event that you and your staff can attend from the comfort of your office or conference room—on your schedule and at no cost.

Held on Wednesday, June 24, the groundbreaking event offers attendees numerous educational webinar sessions, including "Maximizing Learning and Savings by Going Green;" "Trends in Green Design and Construction;" "How to Make the Stimulus Work for You;" "Green Cleaning: How to Turn Your Facilities Into Healthier, More Productive Environments;" and "Renewable Energy Options for Education Institutions."

In addition to the series of one-hour webinars, attendees can participate in post-conference chats with editors, presenters and fellow professionals; visit knowledgeable vendors for the latest in sustainable products and services; stop by the resource center to download white papers, presentations and other data; post new topics on the message boards; and much more—all from a computer.

The event has the support and participation of the leading organizations in the education, architectural and green communities—and all will be available for questions and visits during the day—including AASHE, ASBO, CHPS, HSC, NCEF, NSPMA, SCUP and USGBC.

I hope to "see" you at this groundbreaking event. Register for free at: http://asumag.com/green_virtual_conference ■

Joe Agron

jagron@asumag.com

WEB 101

Text me?

Northridge High School, Layton, Utah, is one of a number of Utah schools that are starting to use cell phone text messaging as a tool rather than see it only as a menacing distraction. Coaches are using it, and teachers are incorporating it into their lessons. Others think cell phones should be kept out of class. Some comments on this topic from Schoolhouse Beat: The Blog:

- "No! Again, it shows how adults have no imagination and want to use the streets to teach the children. Cell phones in schools are useless to begin with, and now they want to give these kids permission to use something that is already a distraction."
- "Yes. Meet this generation where they are living. Let them use their skills in their education. Don't keep them stuck in some old ways of doing things."
- "After working in a school district for 7 years as a technology professional, I think it's imperative that educators use all tools at their disposal to reach the children. If that means texting, then so be it."

For more comments, visit our blog via our homepage at asumag.com or directly at http://blog.asumag.com/schoolhouse_beat.—*Susan Lustig*



AMERICAN SCHOOL & UNIVERSITY®

Penton Media

A PENTON MEDIA PUBLICATION
Chief Executive Officer – *Sharon Rowlands, sharon.rowlands@penton.com*
Chief Financial Officer/Executive Vice President – *Jean Clifton, jean.clifton@penton.com*

MEMBER ORGANIZATIONS
- Business Publication Audit of Circulation, Inc.
- Educational Press Association
- American Business Media

EdPress · American Business Media (ABM) – Association of Business Media Companies · BPA Worldwide

***American School & University*, Volume 81, Issue 10,** ISSN 0003-0945 is published by Penton Media Inc., 9800 Metcalf Ave., Overland Park, KS 66212, 913-341-1300.

SINGLE COPIES: To order single copies, call 866-505-7173 (USA) or 847-763-9504 (outside USA).

SUBSCRIPTIONS: Free and controlled circulation to qualified subscribers. Non-qualified persons may subscribe at the following rates: USA: 1 year, $69, 2 years, $109; Canada: 1 year, $79, 2 years, $139; other international: 1 year, $99, 2 years, $159. Prices subject to change. For subscriber services, write to *AS&U*, PO Box 2100, Skokie, IL 60076-7800; call 866-505-7173 (US) or 847-763-9504 (outside US); or visit asumag.com.

POSTMASTER: Send address changes to *AS&U*, P.O. Box 2100, Skokie, IL 60076-7800 USA.

REPRINTS: To purchase quality custom reprints or e-prints of articles appearing in this publication, contact Penton Reprints at 888-858-8851 (www.pentonreprints.com). Instant reprints and permissions may be purchased directly from our website (www.asumag.com); look for the iCopyright tag appended to the end of each article.

PHOTOCOPIES: Authorization to photocopy articles for internal corporate, personal or instructional use may be obtained from the Copyright Clearance Center (CCC) at 978-750-8400. Obtain further information at copyright.com.

ARCHIVES AND MICROFORM: This magazine is available for research and retrieval of selected archived articles from leading electronic databases and online search services, including Factiva, LexisNexis and Proquest. For microform availability, contact National Archive Publishing Company at 800-521-0600 or 734-761-4700, or search the Serials in Microform listings at napubco.com.

PRIVACY POLICY: Your privacy is a priority to us. For a detailed policy statement about privacy and information dissemination practices related to Penton Media products, please visit our website at penton.com.

CORPORATE OFFICE: Penton Media Inc., 249 W. 17th St., New York, NY 10011; penton.com

INSIDE: FUNDING



INTERIOR FUNDS WILL IMPROVE INDIAN TRIBES' SCHOOL FACILITIES

The U.S. Department of the Interior is allocating more than $277 million for school construction, repairs and improvements for Indian tribes across the nation.

U.S. Interior Secretary Ken Salazar says the funding is part of $500 million from the American Recovery and Reinvestment Act of 2009 that will go to the Bureau of Indian Affairs to support federally recognized tribes.

The Interior Department will earmark $134.6 million to replace aging and deteriorating school facilities funded by the Bureau of Indian Affairs. An additional $143.1 million will be used "to repair building structure and system components that are necessary to sustain and prolong the useful life of Bureau-funded education buildings."

HOUSE COMMITTEE PASSES BILL SUPPORTING GREEN SCHOOL CONSTRUCTION

The U.S. House Education and Labor Committee once again has passed the 21st Century Green High Performing Public School Facilities Act. The legislation would authorize $6.4 billion for school renovation and modernization projects for fiscal year 2010. The full House passed the legislation last year, but the Senate never acted on the bill.

The funding would enable school systems to build modern, more healthful and environmentally friendly classrooms.

"For too long, students and teachers have suffered in school buildings that are literally crumbling, posing direct threats to their safety, health and learning," said U.S. Rep. George Miller, chairman of the committee. "This legislation presents us with a vital opportunity to help boost student achievement, enhance teachers' effectiveness, and create good jobs that transition us toward a clean energy economy." ■

IMPACT AID AVAILABLE FROM U.S. EDUCATION DEPARTMENT

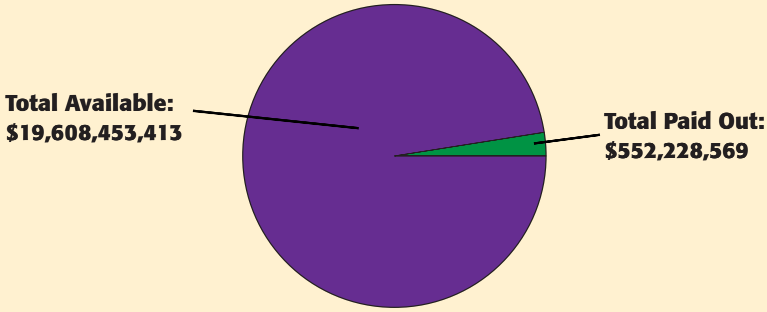
The U.S. Department of Education has made $108.8 million in funding available for targeted students and communities. That includes $39.6 million in 180 Impact Aid Construction grants for communities with military bases, Indian reservations and other federal properties that do not generate local tax revenues.

Another $69.2 million in 52 Homeless Children and Youth grants helps states and school districts meet the educational and related needs of homeless students.

"Given our difficult economic circumstances, it's very important that targeted communities and at-risk populations benefit immediately from the stimulus program," Education Secretary Arne Duncan says. "These investments will create jobs and boost local economies, while also helping raise student achievement."

RECOVERY FUNDS FOR SCHOOLS

Funds from the American Recovery and Reinvestment Act available from the U.S. Department of Education as of May 1, 2009:



Source: "U.S. Department of Education, Financial and Activity Report," www.recovery.gov

CONSTRUCTION ZONE

RENOVATION/ADAPTIVE REUSE

A collaboration

The library at P.S. 58, a public elementary school in Brooklyn, represents a collaboration among parents and administrators who participated in the project's design and fund-raising activities.

The school's "library" had been a dreary space with yellowing shades and cracked vinyl tile floors and was being used as an ad hoc science classroom. The goal was to rediscover the library's purpose as a rich resource within a public school.

Rolling bookshelves allow for large school gatherings and dance classes, and a vibrant palette of materials reflects the spirit and warmth of a library setting. An abstract solar-system design in linoleum flooring and custom furniture create a playful juxtaposition of curved geometries. Murals by parent artists Derek Stenborg and Stephen Gaffney illustrate the history, myths and fables of youth.

The project was completed with public funding and through the fund-raising efforts of the school's PTA. Loci architecture pc (New York City) provided pro bono architectural services.



P.S. 58 library, Brooklyn. Photo courtesy of John Bartelstone



Colorado State University, University Center for the Arts. Photo courtesy of David Patterson

State-of-the-art reuse

Completed in three phases over several years, the $45 million University Center for the Arts (UCA) at Colorado State University, Fort Collins, included the transformation of the 1924 Fort Collins High School into a performing-arts center.

It houses the music, theater and dance programs and encompasses five performance venues: the Griffin Concert Hall; the University Theatre and Studio Theatre in the Bohemian Theatre Complex; the University Dance Theatre and the Organ Recital Hall; and two museums: the University Museum and the Avenir Museum of Design and Merchandising.

The design reflects the building's historic past while achieving acoustical excellence. Several techniques were incorporated to preserve and integrate the historical elements and promote sustainability, including the reuse of the 1924 building shell, reuse of the hardwood flooring from the original gymnasium, linoleum flooring, and more than 10,000 pounds of recycled building materials.

Along with the performance venues, UCA houses classrooms; composition, computer and piano labs; the largest instrumental rehearsal hall in the state; ensemble and performance libraries; acting labs; a computer-aided design (CAD) lab; costume and scenic shops, and storage; three dance studios; 36 soundproof rehearsal rooms; and teaching studios, offices and support spaces. It also is home to the research facilities of the Center for Biomedical Research in Music—one of the world's leading centers in brain research in music perception and neurorehabilitation.

Architect is SLATERPAULL Architects (Denver). The building was constructed by GE Johnson Construction Company (Denver).

Start: Phase I construction: 2003
Completion: Fall 2008
Project area: 330,000 sq. ft.
Cost: $45 million

A complex transformation

A century-old former Rolls Royce showroom on East 61st Street in Manhattan, N.Y., now is a seven-story, 70,000-square-foot, state-of-the-art laboratory and office building for Weill Cornell Medical College (WCMC).

The building, which was constructed in the early 1900s as a showroom and then used as a parking garage, was gutted, leaving only the structural steel and the four exterior walls. Workers poured new slabs and increased the basement size from 500 square feet to 7,500 square feet. The basement houses mechanical space to support labs, a staff lounge and locker area. The facility contains three floors of research labs and two floors of administration offices. Included in the lab portion are cold rooms, fume hoods and support spaces.

The laboratory portions of the building were especially challenging to construct because the building was not designed to fit all of the mechanical/electrical/plumbing systems.

Construction started in September 2007 and, in spite of the addition of the boiler floor, which took three months to build, the project was completed within the original schedule.

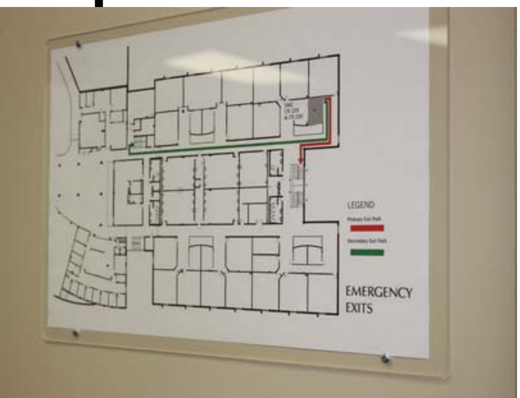
Stonehill & Taylor Architects (New York City) is project architect; Tishman Construction Corporation (New York City) is construction manager. ■



Weill Cornell Medical College, Manhattan, N.Y. Photo courtesy of Bernstein Associates

Security/Life Safety

Simple, inexpensive steps to improve school building security.



Staley High School, North Kansas City, Mo., emergency exits plan.
Photo courtesy of Jennifer Ray

Schools and universities constantly must be vigilant about security on their campuses, but with the economic struggles facing most education institutions, administrators may find it difficult providing protection for students, staff and facilities.

But school officials can enhance safety on their campuses without draining their budgets, The National Clearinghouse for Educational Facilities says. To help administrators accomplish this goal, the clearinghouse has put together a guide for administrators, "Low-Cost Security Measures for School Facilities."

Among the suggestions:

•Limit the use of building entrances to one or as few as possible. Adjust locking hardware on all other entrances so they cannot be opened from the outside without a key, an access card or other device.

•Inspect exterior doors for damage and faulty hardware. Frames, view lights, hinges, locks, and latches should be examined at least monthly, and repaired as needed.

•Install face plates at exterior door latches to prevent jimmying.

•Install fish-eye viewers in exterior doors lacking windows or sidelights to help identify those seeking entry.

•Number doors and rooms in a logical, sequential, floor-by-floor pattern so emergency responders can find them quickly.

•Display room numbers on classroom windows so they are readily visible to first responders from outside the building.

•Inspect all windows accessible from the street for damage and faulty hardware, and repair them immediately.

•Keep unoccupied rooms and spaces locked when not in use. This practice requires full cooperation by faculty and staff.

•Keep egress paths—corridors, stairs, stairwells, and exits—clear of obstructions and flammable materials.

•Make sure that corridor and restroom lighting controls are protected from unauthorized use.

•Check that exit signs are visible and illuminated. Keep a supply of bulbs and spare fixture components for immediate replacement and repair.

•Post clear and precise emergency-evacuation maps in classrooms and other major building spaces and at key corridor locations. Include at least two alternative evacuation routes.

•All classrooms should have two-way communication with the office. Consider providing cell phones, two-way radios, or portable duress alarms to faculty and staff.

•Install a panic or duress alarm at the school reception desk and within the main office area to alert key staff.

•Ensure radio-frequency (RF) communication is possible throughout the school. This capability is critical for local emergency responders. Invite them to test all parts of the building.

•Install a battery or portable generator backup power supply for telephones and emergency communications. Schools without an uninterruptible power supply should have a sufficient backup source to maintain voice communications for at least several hours.

The entire list of suggestions is available online at www.edfacilities.org/pubs/low_cost_measures.pdf. ■
–Mike Kennedy

NOTABLE

3 In feet, the recommended maximum height for bushes on school grounds, to eliminate hiding spaces and provide clear lines of sight.

7 In feet, the recommended height below which tree branches on school grounds should be trimmed to provide clear lines of sight.

20 The maximum percentage of wall space in classrooms or hallways that should be covered with teaching materials or artwork.

Source: National Clearinghouse for Educational Facilities, "Low-Cost Security Measures for School Facilities"


207

BUILT TO LAST

Early proponents of sustainable-design strategies provided facilities that are fulfilling their promise to save energy and improve education.



BY MIKE KENNEDY

It wasn't that long ago that when education architects and administrators raised the notion of green construction or sustainable-design strategies, they were met with head scratches and raised eyebrows.

When she was working on the plans for Third Creek Elementary School in Statesville, N.C., in the early 2000s, Bryna Dunn, the director of environmental planning and research at Moseley Architects in Richmond, Va., recalls that her questions to vendors and contractors created suspicion and even hostility.

"We were getting a lot of pushback from vendors," says Dunn. "I would try to find out what was in products, and I would get a whole range of unpleasant responses. Some of them were thinking I was trying to reveal their trade secrets."

But in 2009, the energy-saving, water-conserving, environmentally friendly philosophies championed by those in the vanguard of the green schools movement have become not just widely accepted, but openly coveted by school systems, higher-education institutions, and the communities they serve.

A key reason for this transformation of attitudes in the education field is that the early adopters of sustainable approaches delivered on their promises: facilities that offer more healthful learning environments, use less energy, consume less water, waste fewer resources and help students improve their performance.

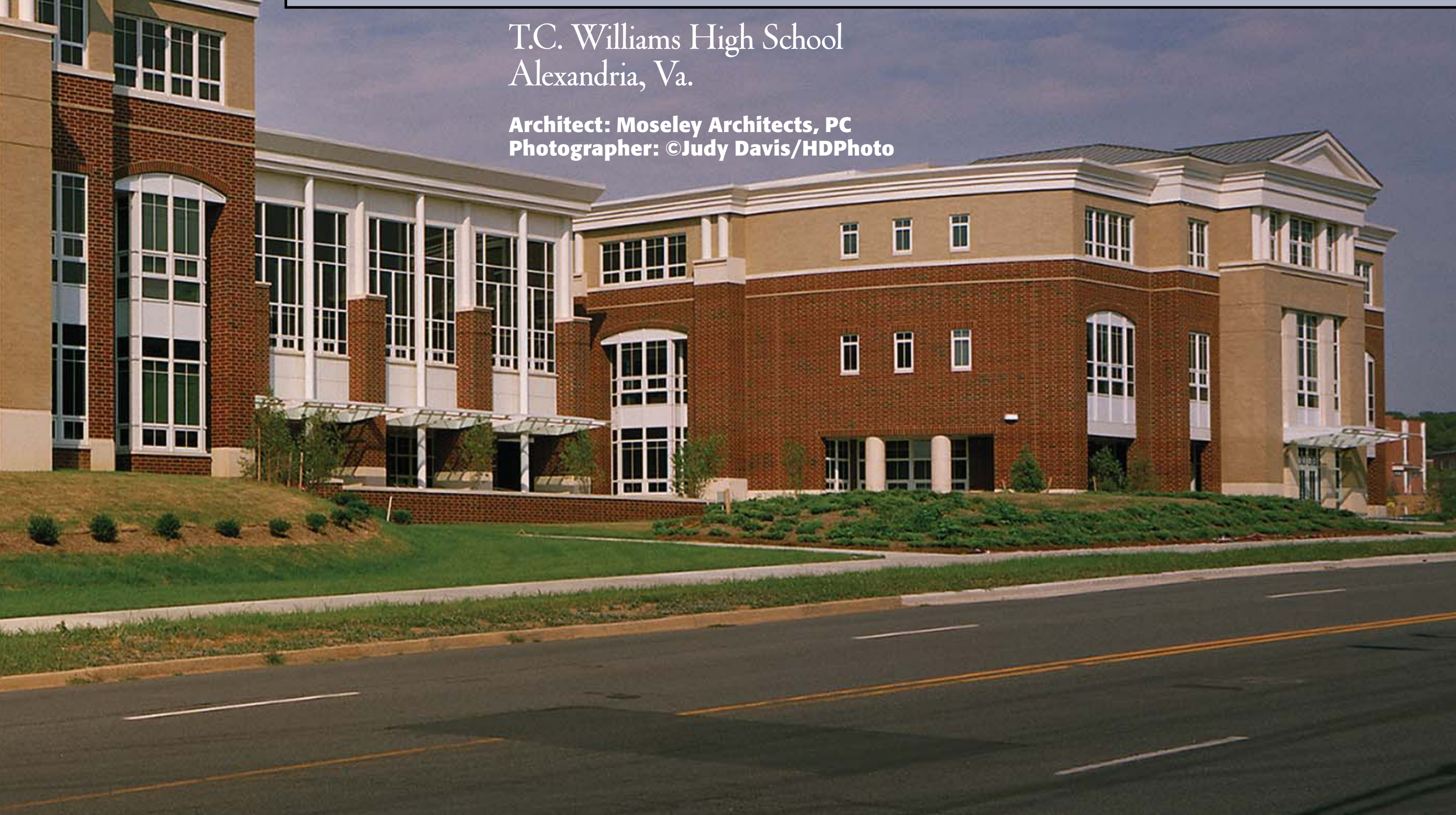
"Ten years ago, they would say, 'Don't bring that stuff to our campus,'" says Casey Cassias, an architect with BNIM in Kansas City, Mo. "Now they say they want at least LEED silver."

A good start

Third Creek Elementary, which opened in 2002, was the first K-12 school facility to earn a gold certification from the U.S. Green Building Council's Leadership in Energy and Environmental Design (LEED) rating system. Seven years later, a gold LEED rating for a school still is rare, but Dunn sees areas where the building's performance would be enhanced if it were being designed now.

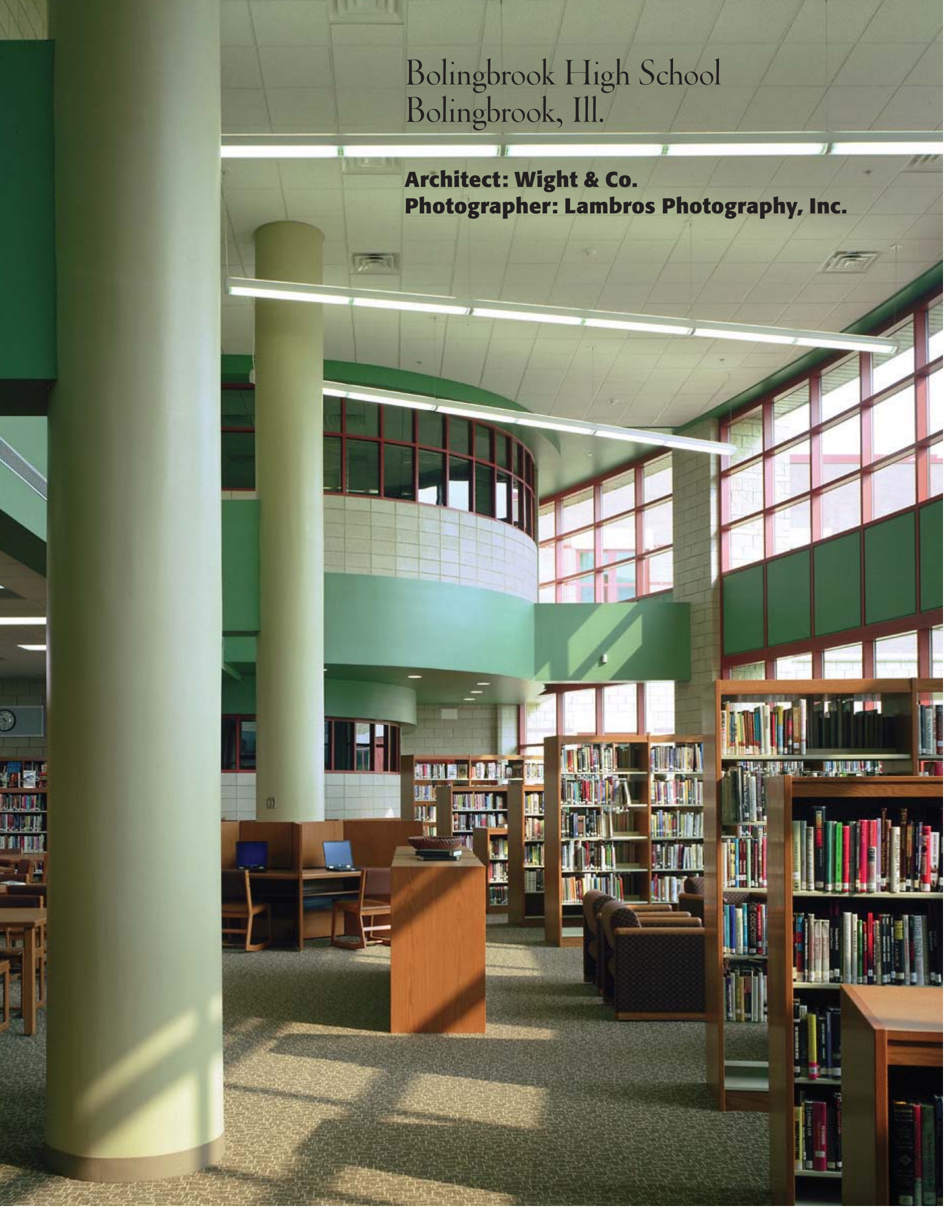
"It has daylight, but it could have had a lot more daylight," says Dunn. "We could only go so far a decade ago. With technology, we could do more with it now."

Identifying the strategies to come up with a green school design was not a problem several years ago, Dunn says. The greater obstacle was finding



T.C. Williams High School
Alexandria, Va.

Architect: Moseley Architects, PC
Photographer: ©Judy Davis/HDPhoto



Bolingbrook High School
Bolingbrook, Ill.

Architect: Wight & Co.
Photographer: Lambros Photography, Inc.

the appropriate materials and equipment, and the companies that could provide them.

"We did waterless urinals and low-flow fixtures, but it's a lot easier to find them now," says Dunn. "Now you can pick and choose."

When planners were able to find the products and equipment that would enable them to meet sustainable design goals, they often found they were not affordable. Dunn says that a decade ago, products that emitted minimal amounts of volatile organic compounds (VOCs) usually were too expensive.

"The options for low-VOC products were limited by costs," says Dunn. "Now every manufacturer has a low-VOC line. In some cases it's cheaper than the products that aren't low-VOC."

At the beginning of the planning process for Third Creek, the Iredell-Statesville district was interested in how better daylighting could benefit the school, and the architects were unsure how far they should push their interest in green design.

"We wondered, 'Should we tell them about LEED and all these other things we can do?'" Dunn says. "After we presented all the information to them, they said they wanted nothing less than silver. Now, in RFPs, districts ask specifically for LEED project experience, they want LEED-AP architects on the project team. It validates what we have been doing."

Moseley Architects has 11 school facilities that have earned LEED certification, says Dunn, and another 28 school projects have registered with the U.S. Green Building Council in hopes of receiving certification.

The sustainable strategies included in the Third Creek design have proven successful.

"Even though the building is being used 30 percent more than projected, it still is conserving energy as predicted," says Dunn. "It's saved $100,000 to $150,000 over five years. That has paid back everything green

Sustainable housing

West Hall, a 170-student residence hall, opened last fall on the campus of Elmhurst College in Elmhurst, Ill. The facility was designed with the aim of receiving a silver LEED rating.

A key sustainable feature of the project is the method for handling stormwater. The site has a network of underground cisterns that collect and store stormwater for irrigation. The hall's parking lot is 100 percent permeable so that water is collected underground instead of running off into storm sewers.



Elmhurst College, West Hall; Architect: Wight & Co.
Photo courtesy of Greg Murphey Studios

The facility includes separate chutes on each floor so students can sort out recyclables from trash, and the bathrooms have dual-flush toilets, with separate settings for solid and liquid waste. Rooftop solar panels provide energy to heat water for the residence hall. Builders used construction materials from the region, and the carpeting and foundation concrete are made with recycled materials.

that we did."

More significant to educators is the improved academic performance of students during the first three years at Third Creek, compared with the test scores of the students who attended the two schools Third Creek replaced.

Changes in attitudes

Experience and technological refinements have helped planners and school administrators improve the sustainability of their construction projects over the years, but the greatest difference in a green school project today compared with a decade ago is the knowledge and acceptance of the concept, and the strategies used to achieve success.

"The perception was that it was going to cost a lot more, and schools didn't want to do it if it was going to cost more," says Brad Paulsen, an architect who is vice president of Wight & Co., Darien, Ill. "It wasn't a common part of the conversation as it is now. Now schools are bringing the conversation to us instead of our bringing it to them."

Wight architects designed Bolingbrook High School, which opened in 2004 and became the first high school in Illinois to receive a LEED rating. The green elements of the school's design include a highly reflective white roof to minimize the heat-island effect; a water-collection system that saves 360,000 gallons of water a year by reusing condensation from the air-handling system; views to the outside in 90 percent of classrooms; a lighting-control system to supplement the daylight; and using building materials with recycled content.

To win over school and university administrators skeptical about the benefits of green design and construction, Paulsen says he emphasizes four points:

•Going green is the right thing to do for the environment.

•A sustainable design will provide long-term savings over the life of an educational facility. "That gets a business manager's ear," says Paulsen.

•A learning environment designed with green principles (effective daylighting, good acoustics, good indoor air quality) can have a positive impact on student performance.

•The facility itself can be used as a learning tool. "The sites themselves are extensions of the classroom and become part of the instructional program," Paulsen says.

Before LEED

Architects are not the only ones who were ahead of their time embracing the green design movement. The Wake County (N.C.) district, as part of the Triangle J Council of Governments, helped develop in 2000 high-performance guidelines for construction projects. Jyoti Sharma, senior director of facilities at the Wake County district, says that for the first projects developed under



Elmhurst College, West Hall, Elmhurst, Ill.; Architect: Wight & Co.; Photo courtesy of Greg Murphey Studios

those guidelines, Wake County had to seek out and help educate designers and builders about sustainable practices and products.

"Over the years, more and more designers and builders have begun pushing green design," says Sharma. "Green has gone mainstream."

As an early proponent of green design, Wake County has 19 schools and three prototype designs that are considered green schools under the Triangle J high-performance guidelines. The sustainable elements in the various schools include daylighting, rainwater-collection systems, solar water heating, recycling of construction materials, drought-resistant plants, and energy-efficient heating and mechanical systems.

"I feel really good about where we went," says

Green comeback

On May 4, 2007, a tornado wiped out most of the small city of Greensburg, Kan., including its three school facilities. As the town dug itself out and formulated recovery plans, the immediate concern for school officials was finding temporary space so that the schools could reopen after the summer recess.

But in considering how to rebuild schools for the long term, town leaders wanted to take advantage of the opportunity the disaster had provided them. They could provide future generations with education facilities that would help the city recover and maybe even thrive for years to come.

"Some people wanted to rebuild quickly and get back," says Casey Cassias, an architect with BNIM in Kansas City, Mo. "But Darin Headrick, the superintendent, said, 'If we just put back what we had before, we'll continue to slide.'"

So the community took the city's name to heart and decided that the new Greensburg would be built using green design concepts. Kathleen Sebelius, the governor of Kansas at the time, asked BNIM architect Bob Berkebile, a longtime advocate of sustainable design and an early leader in the U.S. Green Building Council, to help Greensburg rebuild. BNIM was selected to develop a master plan for rebuilding Greensburg, and the city council decided that all public buildings larger than 4,000 square feet would aim for LEED Platinum certification.

BNIM typically does not work in the K-12 field, but once the community became strongly committed to pursuing green design, school officials decided they wanted to work with someone whose commitment to green matched theirs. So BNIM is designing the new K-12 campus.

"Their attitude is, 'If it takes an extra year to do the proper thing, we'll do it,'" says Cassias.

The new school will be a combined K-12 campus to take advantage of density and cut down on redundancies. The site is on the city's Main Street, so that the campus can serve as an anchor for the Greensburg community, says Cassias.

Among the sustainable elements in the design: a layout along an east-west axis to minimize glare and take advantage of southwest breezes; geothermal power; daylighting and a lighting control system; wind power; use of reclaimed and regional materials; water-efficient landscaping, and retention of water so it can be used for irrigation.

"No water leaves the site," says Cassias.

The architect adds that the school will use only 25 percent of the energy a comparable school would consume. Wind power will provide 50 percent of the school's energy, and more efficient energy use from sustainable practices such as geothermal power and daylighting accounts for the rest of the energy savings.



Greensburg, Kan., K-12 School Facility. Rendering courtesy of BNIM

Some sustainable elements of the school design, such as green roofs, have fallen by the wayside for now because the Federal Emergency Management Agency (FEMA) approves funding only for restoring facilities to what they were before the tornado struck.

The school is scheduled to be completed in 2010. ATS&R, a Minneapolis design firm, is assisting BNIM on education planning for the campus.

Sharma, who is leaving Wake County to work for a school system in Abu Dhabi. "I hope that green design has become part of the culture here."

Still, Sharma wishes there had been more progress in some areas of green design.

"I wish we could have made more progress with renewable energy. I'd like to see solar panels on every square inch of roof—but it's not cost-effective yet."

Another aspect missing from the early green school projects, says Sharma, was following and monitoring the building projects to see if they were delivering energy savings and performing as promised. "The last four years we have had a good commissioning program," says Sharma. "You need to have measurement and verification."

Although Wake County boasts that many of its school facilities are green, that designation is based on the district's own assessment of how it followed the Triangle J high-performance guidelines. Under Sharma's urging, the district has decided to begin seeking LEED certification so that the effectiveness of its green initiatives could be verified by an outside organization. ■

Kennedy can be reached at mkennedy@asumag.com.



Third Creek Elementary School, Statesville, N.C.; Architect: Moseley Architects, PC; Photo courtesy of Spark Productions

35TH ANNUAL OFFICIAL EDUCATION CONSTRUCTION REPORT



By Joe Agron

Spending on construction by the nation's education institutions increased in 2008, reversing four years of declines in total annual expenditures, according to *American School & University*'s 35th annual Official Education Construction Report.

One of the reasons for the increase in spending was the fact that the majority of the construction projects were started prior to the escalation of the economic crisis and were locked in to higher prices for materials and labor, among other things. Total spending on new, addition and modernization construction by school districts and higher-education institutions increased to $43.3 billion in 2008 from $32.9 billion the year before.

Spending by school districts increased to $25.5 billion in 2008 from $20.3 billion in 2007. New construction spending by K-12 institutions grew 18 percent and addition/modernization spending jumped 46 percent. Colleges and universities spent $17.8 billion on construction in 2008, up from $12.7 billion the year before. Expenditures grew 35 percent for new construction and 48 percent for additions and modernizations.

The following pages contain the authoritative source for education construction data, detailing spending by type of institution; projected spending through 2011; per-square-foot and per-student costs; and much more. In addition, data on the impact of green and security on education construction is included, providing you with insight as you plan future construction projects.

For those looking for additional data, go online at www.ASUmag.com. Look for the "Web Exclusive" icon throughout this survey that will direct you to a special online area—and exclusive data not found in the print version on education construction expenditures as well as trend information for the past 35 years.

Continued . . .




THE MOST BELIEVABLE ARCHITECTURAL STONE VENEER IN THE WORLD™
Circle 110 for more information ■ freeproductinfo.net/asu

Education construction completed in 2008

($000s)

The National Picture	
SCHOOL DISTRICTS	
$17,327,270	New
$8,185,048	Adds/Mods
$25,512,318	**TOTAL**
COLLEGES	
$9,829,779	New
$7,955,333	Adds/Mods
$17,785,112	**TOTAL**
ALL EDUCATION	
$27,157,049	New
$16,140,381	Adds/Mods
$43,297,430	**TOTAL**

Education construction projected to be completed in 2009-2011

($000s)

The National Picture	
SCHOOL DISTRICTS	
$43,750,822	New
$19,605,268	Adds/Mods
$63,356,090	**TOTAL**
COLLEGES	
$29,483,012	New
$20,972,965	Adds/Mods
$50,455,977	**TOTAL**
ALL EDUCATION	
$73,233,834	New
$40,578,233	Adds/Mods
$113,812,067	**TOTAL**

The Trusted Source

As the bellwether report documenting education construction activity for the past 35 years, *American School & University*'s Official Education Construction Report is regularly referenced by local, state and federal agencies, as well as the nation's leading news organizations. *AS&U* actually started compiling data on school and university construction in 1950 for the 1949 year. After a decade or so of yearly surveys, data began being compiled sporadically until industry demand prompted *AS&U* to start collecting data annually again. The annual reports resurfaced in 1975 with information on education construction completed in 1974, and data has been collected and published every year since. ***American School & University* is the only authorized source of this education construction information.**

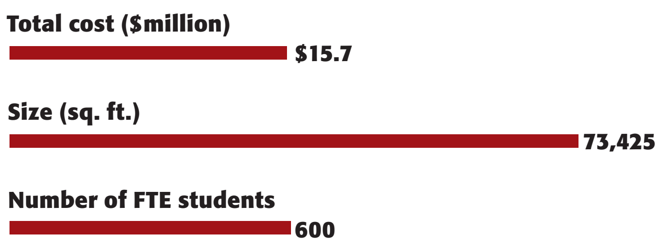
New school costs

(MEDIAN)

	Elementary	Middle	High
Cost/Square Foot	$154	$167	$154
Cost/Student	$18,833	$24,143	$23,125
Square Feet/Student	123	145	150
Number of Pupils	600	700	1,600
Size (sq. ft.)	73,590	101,328	240,695
Total Cost ($000)	$11,300	$16,900	$37,000

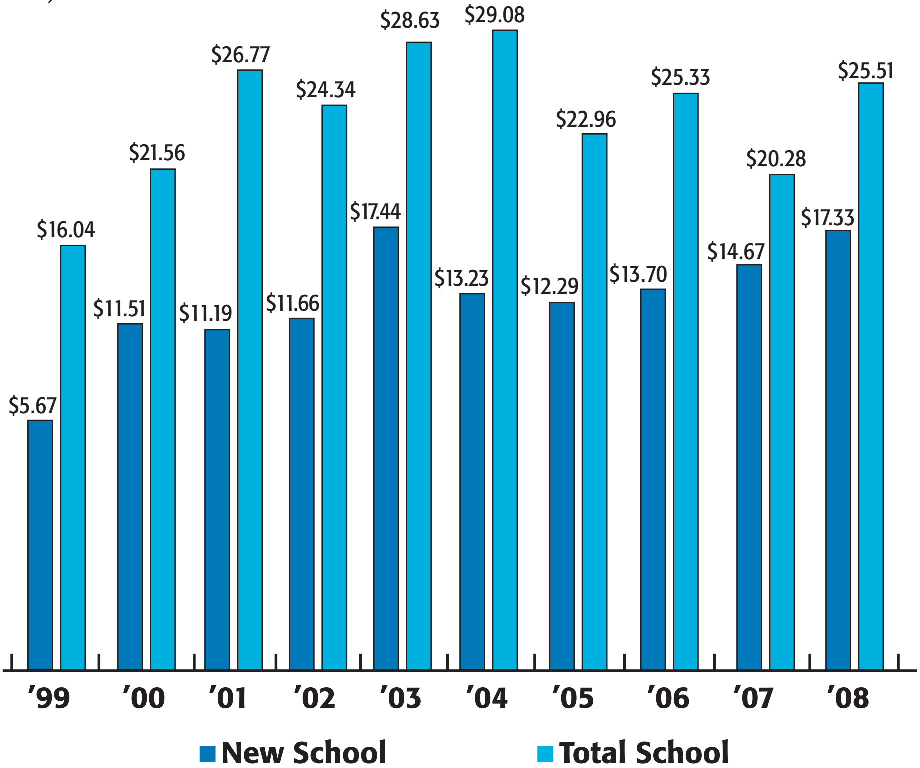
New college building data

(MEDIAN)



School construction trends—10 years of activity

Construction spending by school districts increased in 2008 from a decade's low in 2007. Results over the past 10 years ($ billions):



School Data

4,235
Mean number of students at responding school districts.

29
Percentage of school districts completing some form of construction project in 2008.

46
Percentage of school districts planning a construction project to be completed by 2011.

$17.8
Amount, in millions, the median new school district construction project completed by 2011 is expected to cost.

$38
Amount, in millions, the mean new school district construction project completed by 2011 is expected to cost.

CLICK 101

WEB EXCLUSIVE

- CHART: How the construction dollars are divided
- TIMELINE: Enrollment and construction—SCHOOLS

ASUMAG.COM/EXCLUSIVE

College Data

7,087
Mean number of FTE students at responding colleges and universities.

57
Percentage of colleges and universities completing some form of construction project in 2008.

70
Percentage of colleges and universities planning a construction project to be completed by 2011.

$18
Amount, in millions, the median new college and university construction project completed by 2011 is expected to cost.

$37.1
Amount, in millions, the mean new college and university construction project completed by 2011 is expected to cost.

Arriving at the results

Results for the 35th annual Official Education Construction Report were compiled via a detailed questionnaire sent to chief business officials at the nation's school districts and colleges, asking about construction completed during the past year and construction planned to be completed in the next three years.

Administrators that completed or planned construction during this timeframe were then asked to provide a variety of details on the amount being spent, the type of construction being done (new, addition or modernization), and the expected completion date. All respondents involved with new and retrofit construction were asked to provide additional information on each project. Follow-up correspondence was made to clarify some data. Responses were separated by institution type, region of the country and institution size, and projected across the education universe.

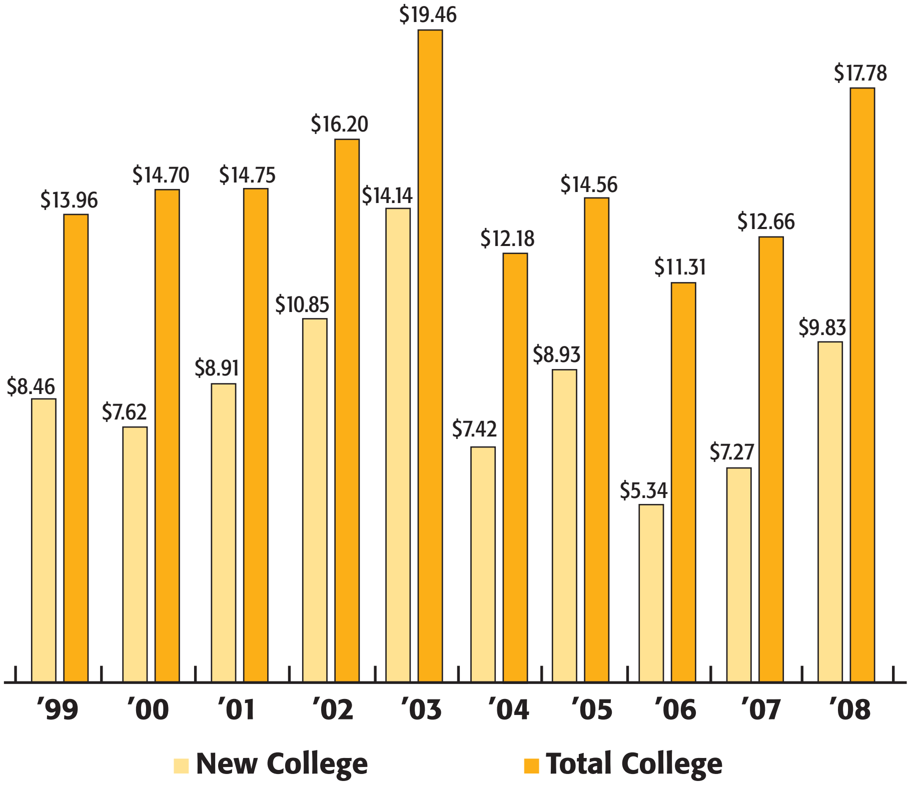
Total education construction activity—10 years

Total spending on construction by all education institutions over the past 10 years (in $ billions):



College construction trends—10 years of activity

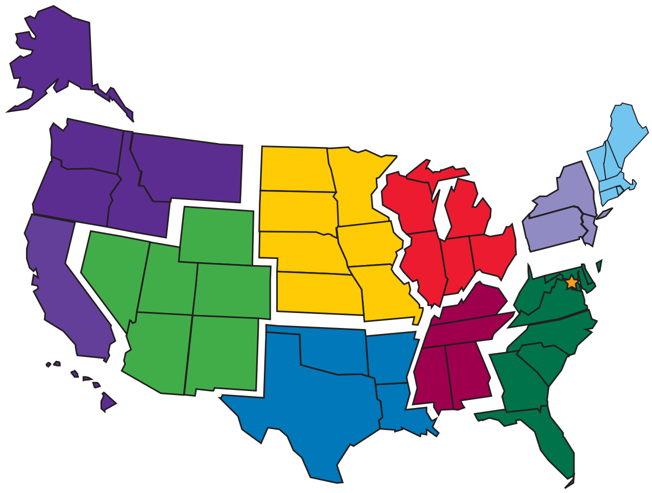
Construction spending by colleges and universities continued to climb in 2008, with new construction making up more than half the expenditures. Results over the decade ($ billions):



Construction Insight: School Districts

School construction projects are embracing green principles and security considerations. As part of *AS&U*'s Official Education Construction Report, those SCHOOL DISTRICTS that completed new projects or were planning to complete construction by 2011 were asked a number of questions regarding the importance of green and security issues in their programs.

Here are the results:



How important is the incorporation of security equipment (cameras, locks/access control, etc.) in your construction project?

National: 59.3% very important.

South Atlantic (DC, DE, FL, GA, MD, NC, SC, VA, WV) ranked the highest (71.4% very important).

East South Central (AL, KY, MS, TN) ranked the lowest (23.8% very important).

Are green/sustainable concepts important in determining the types of materials/products used in your construction project?

National: 70.7% yes.

Middle Atlantic (NJ, NY, PA) ranked the highest (85.0% yes).

West South Central (AR, LA, OK, TX) ranked the lowest (44.8% yes).

If yes, what areas incorporate green decisions?

LIGHTING/CONTROLS 86.0% (National)
- **New England** (CT, MA, ME, NH, RI, VT) ranked highest (100%).
- **East South Central** (AL, KY, MS, TN) ranked lowest (64.7%).

HVAC 77.3% (National)
- **New England** (CT, MA, ME, NH, RI, VT) ranked highest (100%).
- **East South Central** (AL, KY, MS, TN) ranked lowest (64.7%).

DAYLIGHTING/CONTROLS 70.7% (National)
- **Pacific** (AK, CA, HI, OR, WA) ranked highest (81.3%).
- **West North Central** (IA, KS, MN, MO, ND, NE, SD) ranked lowest (58.1%).

BUILDING MATERIALS 61.6% (National)
- **Middle Atlantic** (NJ, NY, PA) ranked highest (85.3%).
- **South Atlantic** (DC, DE, FL, GA, MD, NC, SC, VA, WV) ranked lowest (46.7%).

WASHROOMS 57.6% (National)
- **Middle Atlantic** (NJ, NY, PA) ranked highest (70.6%).
- **East South Central** (AL, KY, MS, TN) ranked lowest (29.4%).

ROOFING 56.3% (National)
- **West South Central** (AR, LA, OK, TX) ranked highest (84.6%).
- **East South Central** (AL, KY, MS, TN) ranked lowest (35.3%).

FLOORING/CARPETING 54.1% (National)
- **Pacific** (AK, CA, HI, OR, WA) ranked highest (72.7%).
- **East South Central** (AL, KY, MS, TN) ranked lowest (35.3%).

FURNITURE/FURNISHINGS 29.3% (National)
- **Pacific** (AK, CA, HI, OR, WA) ranked highest (45.5%).
- **East North Central** (IL, IN, MI, OH, WI) ranked lowest (22.9%).

Construction Insight: Colleges

As part of *AS&U*'s Official Education Construction Report, COLLEGES that completed new projects or were planning to complete construction by 2011 were asked a number of questions regarding the importance of green and security issues in their programs.

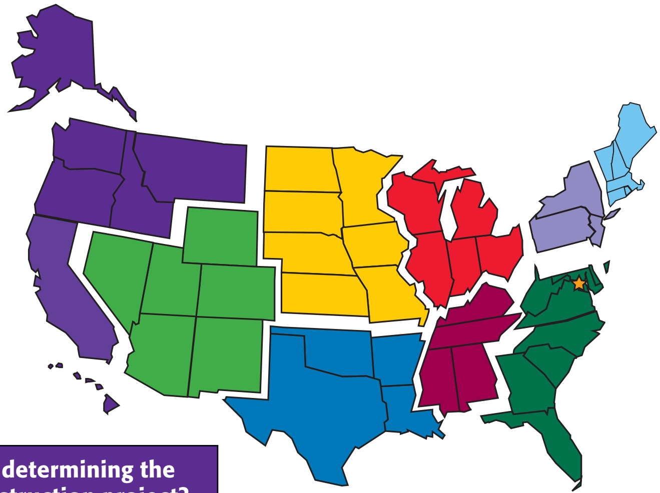
Here are the results:

How important is the incorporation of security equipment (cameras, locks/access control, etc.) in your construction project?

National 62.2% (very important).

West South Central (AR, LA, OK, TX) and **Mountain** (AZ, CO, ID, MT, NM, NV, UT, WY) ranked the highest (66.7% very important).

New England (CT, MA, ME, NH, RI, VT) ranked the lowest (41.7% very important).



Are green/sustainable concepts important in determining the types of materials/products used in your construction project?

National: 88.3% yes.

New England (CT, MA, ME, NH, RI, VT) and **Mountain** (AZ, CO, ID, MT, NM, NV, UT, WY) ranked the highest (100% yes).

West South Central (AR, LA, OK, TX) ranked the lowest (70.8% yes).

If yes, what areas incorporate green decisions?

LIGHTING/CONTROLS 86.2% (National)
- **East North Central** (IL, IN, MI, OH, WI) ranked highest (95.3%).
- **New England** (CT, MA, ME, NH, RI, VT) ranked lowest (66.7%).

HVAC 84.2% (National)
- **Mountain** (AZ, CO, ID, MT, NM, NV, UT, WY) ranked highest (100%).
- **New England** (CT, MA, ME, NH, RI, VT) ranked lowest (66.7%).

BUILDING MATERIALS 79.3% (National)
- **Mountain** (AZ, CO, ID, MT, NM, NV, UT, WY) ranked highest (94.4%).
- **East South Central** (AL, KY, MS, TN) ranked lowest (64.3%).

DAYLIGHTING/WINDOWS 77.8% (National)
- **Mountain** (AZ, CO, ID, MT, NM, NV, UT, WY) ranked highest (94.4%).
- **East South Central** (AL, KY, MS, TN) ranked lowest (64.3%).

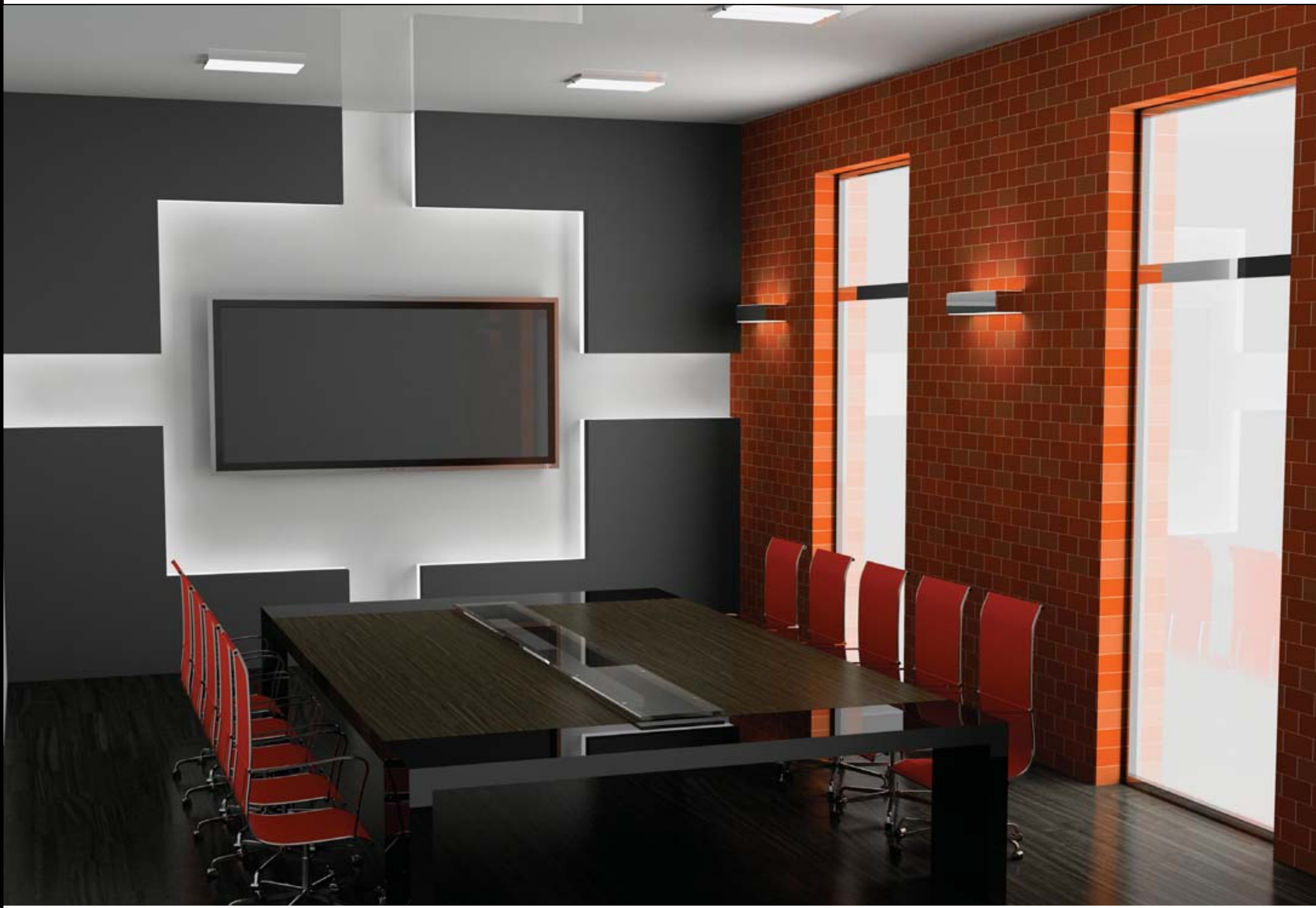
FLOORING/CARPETING 67% (National)
- **Mountain** (AZ, CO, ID, MT, NM, NV, UT, WY) and **Pacific** (AK, CA, HI, OR, WA) ranked highest (77.8%).
- **New England** (CT, MA, ME, NH, RI, VT) ranked lowest (41.7%).

WASHROOMS 66% (National)
- **New England** (CT, MA, ME, NH, RI, VT) ranked highest (75%).
- **West South Central** (AR, LA, OK, TX) ranked lowest (35.3%).

ROOFING 65% (National)
- **Pacific** (AK, CA, HI, OR, WA) ranked highest (83.3%).
- **South Atlantic** (DC, DE, FL, GA, MD, NC, SC, VA, WV) ranked lowest (54.8%).

FURNITURE/FURNISHINGS 47.8% (National)
- **Pacific** (AK, CA, HI, OR, WA) ranked highest (61.1%).
- **East South Central** (AL, KY, MS, TN) ranked lowest (28.6%).

Agron, editor-in-chief, can be reached at JAgron@ASUmag.com.
Research conducted by Elinor Rice, senior research manager, Penton Media.



Technology plays a very important role in the modern education office.

Office Space

How will technology affect the education office environment?

By C. William Day

Principals and administrative staff who retired 50 years ago probably could return to most of today's school offices, and all they would ask is what are those funny little TV screens doing where typewriters ought to be. No doubt people have moved "in" and "out" boxes around, experimented with horizontal vs. vertical sign-in/sign-out sheets, and relocated the occasional table to provide better access to morning donuts. Otherwise, today's office looks pretty much the same.

Americans are very caught up in tradition. It's hard to think outside the box because they have spent most of their time inside that box. The educational office is a great example. When planning a new or renovated education facility, schools tend to count the number of people

and plan from there—because that's the way they always have done it. The technology tools that are available have had little, if any, effect on office planning or design. Research tells us that 70 percent of office work is collaborative, and 30 percent done individually. The modern office was conceived when that ratio was reversed—yet the layout and design have remained virtually the same.

A changing environment

The office environment 10 years from now will be different from the one today. More office personnel will be organized around processes rather than functions. More work activities will be done by teams rather than individuals, and those teams will change over time, as will the nature of the work projects and the people who constitute the team.

But what about the traditional need for privacy to think and create? That too, will be part of the office of the future. There has to be space for people to retreat from those teams to individual work areas. It also will be necessary to have confidential conversations with a small number of students, parents or law-enforcement officials. School administrators might consider how modern thinking—and modern technology—influences how office space is laid out and managed. Office spaces will need tremendous flexibility to allow for continual reconfiguration.

The goal in a futuristic office design should be to provide efficient space. One of the most difficult factors in office design is how to incorporate emerging technologies. Today, instead of just ensuring the usual electrical, lighting, HVAC and power requirements, the office also must provide a robust data network and communications technology for every workspace. Laptops, Wi-Fi and smartphones signify that high-tech office workers no longer are tethered to their desks. The main goal of tomorrow's office will be to help workers capture and organize information more easily and efficiently. These changes in technology for the office space are exciting because it makes institutions look at the office and at "work" from a new vantage point.

Technology replacements

Many administrative staffs think they can't do much about the actual footprint of the school office area—or can they? A small renovation of existing space can provide a land-

scape area for waiting, reception and clerical staff, with smaller private offices and conference spaces nearby. Consider the things that take up office space today: file cabinets for document and information storage.

Digital is the future, so endless file cabinets can be eliminated by using a digital document machine. The machine works when a person puts a document of text or graphics into the machine and it makes a digital snapshot of the document that can be edited, faxed, photocopied or transmitted to any number of people via a network or the Internet. Then it can be stored as a digital image.

Drowning in paperwork and files? What school isn't these days? Software programs can digitize an entire school's activities to streamline operations. The software has modules for creating class schedules, tracking grades and attendance, and even an extensive section on discipline.

More schools and universities are going paperless. The less-paper office is a goal obstructed by both physical and psychological barriers, but slowly those barriers are falling. However, the reality of going virtual requires a responsible IT department with the capability of daily backups. With the price of hard-drive space and servers lower than ever, paperless is the wave of the future.

Technology itself is causing office design to evolve. Keep in mind that all high-tech tools of the future eventually will work together and be linked to and controlled by a computer. Therefore, avoid thinking of electronic equipment as standalone instruments.

Touchscreen tablet PCs, for example, might provide a vast improvement to having a sign-in sheet on a clipboard. Such a system could print legible nametags for visitors, and automatically note when they sign in or out. Creating a searchable, electronic record of school visitors also enhances building security.

The office future

Video teleconferencing at the office level is a fast-growing technology. With the initial cost of the unit and either an LCD screen or a data projector in a conference room, a video teleconferencing system enables faculty and staff to collaborate with other faculty and staff anywhere in the world via the Internet. The most persuasive selling point for this technology is the savings in travel time and cost.

One more essential tool is a pop-up device in the conference room table that enables laptops to be plugged in, and provides power, data and VGA connections so that the laptop display can be shown on a display device in the conference room.

Don't overlook the phone. If you need to buy a new phone system, a digital solution is the way to go. Consider leasing, which sets a fixed life for office equipment, forcing schools to evaluate new capabilities periodically. Aim for as short a lease contract as possible. Another reason for short contracts is that the day is rapidly approaching when land lines will give way to cellular.

Office innovation is about to take another leap. Wireless communication tools are becoming increasingly sophisticated. These unobtrusive, portable tools are expected to combine the functions of multiple pieces of hardware—such as personal computer, phone, fax, scanner, electronic organizer or camera—into a single device. School administrators will use them to participate in videoconferences; check e-mail; return calls; upload and download documents; distribute reports; collaborate on projects; conduct research; schedule virtual meetings; scan printed documents or images; and send or receive text, audio and video.

Some common questions administrators should consider before upgrading office space:

•Are there office tasks that can be accelerated or done less wastefully by using technology?

•Are there additional benefits, such as automated recordkeeping, that can be accomplished more productively via technology?

•What linkages between different pieces of technological equipment might save time, money, human resources, or produce additional benefits?

•How can resources be best allocated to gain the most from new or upgraded technologies?

There's a lot administrators need to consider before creating an office for the future. It can't be accomplished in one step. But, at the very least they must plan for improvements in a unified way. Planning must be coordinated so that all the pieces work as a team. Recognize that tomorrow's technology also will change. The best an administrator can do is plan three to five years into the future. But that's better than not planning at all. ■

Day is senior research analyst with KBD Planning Group, Young Harris, Ga. He also is AS&U's "Tech Talk" columnist. He can be reached at bday@kbdplanning.com.

WEB 101

How has your school office changed over the years? Let us know by commenting on this article at ASUmag.com.



Studies have shown that where well-designed natural light illuminates classrooms, student achievement improves.

Efficiency Goals

Education institutions can save energy with smart lighting choices.

By Donald Graham

The lighting of learning environments is an important focus in designing new schools and renovating older schools. Studies long have shown that appropriate lighting levels and daylighting improve learning; now, climbing energy budgets have spurred school administrators to seek more efficient use of lighting.

Electricity rates are expected to rise over the next several years. That makes efficient lighting design and control strategies even more critical. According to a major lighting controls manufacturer, lighting can represent up to 55 percent of an education facility's electric use. For the average school in the northern United States, lighting represents 15 percent of overall energy costs. The good news is that improved lighting efficiency and controllability can

yield energy savings of up to 40 percent; some new products are touting energy savings as high as 60 percent.

Some states—including Alabama, Florida, New York and West Virginia—now are making grant monies available to schools for energy-efficient designs.

Controlled lighting

New school designs are taking advantage of rapid improvement in lighting-control strategies and illumination systems, and existing schools can be retrofitted to realize savings.

The three most prevalent energy-saving tactics are increased use of daylighting, maximum controllability and prudent selection of lighting equipment.

•**Daylighting.** The more that natural light floods a classroom, the less artificial light is required. Studies have shown that where natural light illuminates classrooms, student achievement improves. But for daylighting to improve learning environments, it must be controlled appropriately. Glare and solar heat gain can create an uncomfortable classroom environment and negate the advantages of natural light.

Shading devices on windows can reduce glare and heat gain. Light shelves, mounted either internally or externally, can bounce sunlight from reflective surfaces upward and deeper into the classroom, thereby distributing light evenly. Light shelves generally are used to shield and disperse light coming in from south- and west-facing windows. The heat energy that light shelves add to a classroom is on the same order as that generated by ceiling mounted fixtures.

> **NOTABLE**
>
> **6.5 to 7**
>
> In feet, the typical height of interior light shelves.

Interior light shelves generally are mounted between 6.5 feet and 7 feet high, which is safely above head height. This leaves the bottom two-thirds of a window exposed to direct sunlight. To diffuse glare and dampen heat gain, shades or diffusers can be installed within windows

or on the interior. Some shades and diffusers will admit a majority of the natural light into a classroom while reducing heat gain and glare.

The cost of interior light shelves averages about $1,500 per classroom, resulting in a payback of more than 15 years in energy savings. Although adding light shelves may not result in short paybacks, it does improve the lighting environment by enhancing uniformity and penetration of natural light.

In contrast, new glazing technologies can greatly reduce solar gain. The low-E family of glazing may work in concert with shades, or may even eliminate the need for shades. Some glazing technologies also have insulated double panes filled with argon gas to reduce energy loss. The glass also may be finished with a low-E coating, which keeps interiors warmer in the winter and cooler in the summer, and helps protect interior furnishings from fading.

Shading devices can be used on windows to reduce glare and heat gain.

Low-E solar-control glass is good for hot climates because, in addition to improving the insulating ability of windows, it also limits solar heat gain by blocking passage of infrared and some ultraviolet spectrum light. Solar-control glass allows a higher level of visible light to pass through a window with less solar heat gain than tinted window coatings. Glazing with a low visible light transmittance (VT) value can be used in applications where direct sunlight is problematic.

•**Controllability**. Significant advances have been made in lighting control. The days of turning light switches on and off manually (or forgetting to do so) are nearly gone. Occupancy-sensing and lighting-level technologies enable school buildings to more closely match lighting levels to actual needs. They also limit use to only those times that spaces are occupied.

Advanced lighting controls even can be programmed to bring several levels of light to different areas in the same space. For example, the front of a computer classroom may be awash in light when the teacher uses a white-

board, while rows of pendant fixtures above computer monitors at student workstations are lighted dimly.

Another lighting-control factor affecting schools is the move toward simplicity. If the controls are too complex for teachers to master, the system won't be used, and the benefits are lost. Therefore, simplifying lighting controls has become a high priority. When a lighting system requires little human intervention and is self-regulating, an educator can focus on teaching and other important tasks.

In addition, some control systems benefit maintenance programs by monitoring and calculating the expended service life of lamps and alerting workers when the appropriate replacement time arrives. They also will pinpoint the location of burnt-out lamps and monitor power consumption.

•**Lighting equipment**. Most lighting equipment and control manufacturers have embraced sustainable and green products, and the advances made have been not just in efficiency. Technology advances in types of lighting fixture materials, such as high optic lens and the combination of various styles of fixtures—pendants and recessed—also reduce glare and improve uniformity. These advancements deliver the appropriate level of illumination to where it is needed.

Providing electronic dimming ballasts is the optimum strategy for energy savings and controlling the desired light level for each activity. Dimming ballasts will increase installation costs, but as technology improves and demand increases, costs will drop. Dimming ballasts would be the preferred choice when used with daylight harvesting controls to provide gradual lighting adjustments.

A suitable alternative to full-range dimming is electronic step ballast technology. The ballast can control light levels through programmed increments. This can be effective in many applications where reduced light levels are required but where fine control, as afforded by full-range dimming ballasts, is not needed. Conference rooms and some classroom spaces are typical applications. However, if daylight controls are used, changes in light levels may be less subtle with step ballasts. Either full dimming or step ballasts with programmed circuitry will work well with occupancy sensors; even with frequent on/off starts, the lamp life can be maintained.

New lamp technology is producing lamps with a smaller diameter; T-5 lamps are a mere 0.67 inches in diameter. This newer fluorescent technology with higher light output and smaller diameters offers improved fixture efficiencies. Combining this new technology with the improved light-reflecting surfaces of reflectors and optic system materials contributes to greater overall fixture efficiencies.

With all the new energy-efficient technology and equipment, education administrators have a prime opportunity to work with their architects to increase the use of natural light and be in a good position to recommend the most efficient lighting strategy for their schools. ■

Graham, LC, LEED AP, is an associate with Erdman Anthony, Harrisburg, Pa., a multidisciplinary firm that specializes in infrastructure engineering and support services.

WEB 101

Need to shed a little more light on the subject? Visit our lighting article archives at ASUmag.com.

A Green Launch

Making the journey toward sustainability.

STEPHEN ASHKIN



Ashkin is executive director of the Green Cleaning Network, a 501(c)3 not-for-profit educational organization.
www.GreenCleaningNetwork.org
SteveAshkin@GreenCleaningNetwork.org

Schools and universities clearly have been among the early adopters of the green movement.

Among the greening options for schools and universities, one of the "low-hanging fruits" is green cleaning. Green-cleaning products include cleaning chemicals; sanitary paper products, such as toilet tissue and hand towels; and janitorial equipment.

As the green-cleaning movement matures, institutions are becoming more sustainable themselves, and are looking beyond purchasing green products; they want to buy from green or sustainable companies.

Four steps will help a school or university launch a sustainability program or improve an existing one:

•**Get educated.** Many so-called sustainability programs are nothing more than environmental programs with a fancy name. Understanding the differences is essential; it will affect what information needs to be collected. It is important to be prepared to answer questions about why some things were included and others were not.

•**Use an existing "roadmap"** such as the one developed by the Global Reporting Initiative (www.globalreporting.org) or join the Association for the Advancement of Sustainability in Higher Education (www.aashe.org). These organizations can identify more easily which indicators should be tracked. If there are plans to share the information with others (including with staff, parents, alumni or supply chain) or compare performance with other schools and universities, it is important to address critical issues and report them consistently.

•Once the various indicators have been chosen for tracking, **determine how each indicator will be measured.** Some indicators or issues are important, but capturing the data may be elusive or even impossible. When deciding which data need to be collected, it is most efficient to use existing data and existing methods of data collection. For example, using the U.S. Green Building Council's LEED for Existing Buildings Rating System (www.usgbc.org/DisplayPage.aspx?CMSPageID=221) offers many measures for environmental impacts associated with a building (e.g. water, electricity, etc.).

After deciding the indicators and how to measure them, you should determine who owns the data (e.g. facilities own the environmental data, human resources owns social equity info, accounting owns financial data, etc.).

•Perhaps most important, **decide before beginning who is going to use the data and for what.** Developing an annual sustainability report that is posted on a website is different from developing a "tool" that will be used to manage and transform an institution. If the goal is the latter, then use indicators and metrics that will provide frequent feedback. That means data collection and input should be reasonably easy. ■

DON'T MISS ARCHITECTURAL PORTFOLIO 2009


Studio B Architects / Time Frame Images



DLR Group / Mark Bosclair


Harriman / Gary Langley/Blind Dog Photo, Inc.


Cuningham Group Architecture, PA / Dana Wheelock

American School & University is now accepting entries for the 27th Annual Architectural Portfolio. The ultimate tribute to education design excellence, featured projects will be published in the November 2009 issue of *AS&U*.

Include YOUR School or University!

Contact Molly Roudebush at 913-967-1959 or mroudebush@asumag.com today to receive an official entry form.

Visit www.SchoolDesigns.com/Architectural_Portfolio.htm for more information.

AMERICAN SCHOOL & UNIVERSITY

From the Ground Up

Sustainable energy under our feet?

JAMES E. RYDEEN



Rydeen, FAIA, is an architect/facility planning specialist and former president of Armstrong, Torseth, Skold & Rydeen, Inc. (ATS&R), Minneapolis. He can be reached at Jrydeen@atsr.com.

Buildings are the largest source of energy consumption and greenhouse-gas emissions.

The American Institute of Architects is promoting goals of 50 percent carbon-emission reduction by 2010 and carbon-neutral buildings by 2030. To get there, buildings need to be designed to use sustainable energy. One sustainable-energy source with great potential is geothermal power—energy generated from heat stored in the Earth. Installations have been made in schools of all sizes:

•In 1987, a 287,000-square-foot Minnesota high school was designed with a closed-loop geothermal system. Its 285 wells circulated a water/glycol mixture between deep wells into the building's heat pumps. Galvanic corrosion occurred between dissimilar pipe metals in the closed-loop system inside the building when the percentage of glycol in the water/glycol mixture dropped below the recommended levels. The contractor failed to install dielectric isolators between dissimilar pipe metals.

•A partial geothermal system was installed in a 21,000-square-foot addition in 2008 using a conventional variable air volume (VAV) with standard air-handling units (AHU), four-pipe heating-cooling system, air-side heat recovery, water-to-water heat pumps, and a geothermal well field. This configuration can operate air-side economizers, and it can use the well water to cool the building directly when the ground temperature and indoor humidity allow, thus giving two sources of free cooling. When outside temperatures are cool and air-side economizers on, AHUs provide cooling without any compressors running; when the well return temperature is cool enough, the sensible cooling mode provides air conditioning without compressors operating.

Geothermal heat pumps (GHP) use 25 to 50 percent less electricity than conventional heating or cooling systems, the U.S. Department of Energy says. Geothermal heat pumps can reduce energy consumption—and corresponding emissions—up to 44 percent compared with air-source heat pumps and up to 72 percent compared with electric resistance heating using standard air-conditioning equipment.

One disadvantage has been the cost of large well systems; however, fuel costs and environmental concerns have increased interest in alternative fuels:

•Centralizing equipment within the boiler room reduces long-term operations and maintenance costs.

•Redesigning well points for circulating the water into the Earth have become more efficient, thus significantly decreasing the number of wells and initial costs.

•A pond at least 15 feet deep with heat-exchanger plates on the bottom eliminates the need for drilling and maintaining a well field.

•Geothermal saves energy and is renewable: 1 kilowatt of energy used results in 3 kilowatts of energy. ■



Lighting shades

Orbit Industries/UMI. Orbit/Evergreen's new B180 solid brass pathlights have shades that can be switched out to coordinate fixture styling with the landscape or architectural design. The Model B180 stem accepts six different shade designs in a range of styles and sizes, including fluted shades with cut-out patterns, shades with hammered detailing, or geometric and pagoda options. The low-voltage B180 fixture is offered in three finishes: antique brass, antique bronze and architectural bronze. Brass shades vary in width from 5.5 to 8.5 inches and attach with a screw-top finial.

Circle 150 for more information
freeproductinfo.net/asu



Secure lock

Frank J. Martin Company. The four-dial Combi-Cam has been added to the three-dial product line. The secure, all-metal combination cam lock replaces any ¾-inch keyed cam lock and has 10,000 possible combinations that can be reset easily within seconds. To reset the combination, simply have it on the opening combination for the cam and push in the reset button. The four-dial Combi-Cam is available in 5/8-inch cylinder length and chrome finish.

Circle 151 for more information
freeproductinfo.net/asu



Improved hand dryer

Mitsubishi Electric HVAC. The improved, high-speed Jet Towel hand dryer provides restrooms with a more economical and sanitary option that dries hands in three to six seconds. It is offered with or without a heating function. The heated option is equipped with an instant hand warmer that is triggered as soon as hands are placed inside. Both versions now feature an updated hyper-nozzle design that combines rapid drying with noise reduction.

Circle 152 for more information
freeproductinfo.net/asu

CONTINUED...

Going solar

Wyandotte School District works hard to be green



Wilson Middle School, Wyandotte, Mich.

Johnson Controls, Inc. With more than 4,700 students, Wyandotte (Mich.) Public Schools has a high school, middle school, six elementary schools and three administration facilities totaling more than 900,000 square feet.

The district, one of the lowest-funded in Michigan, also is one of the greenest. Photovoltaic panels provide clean energy, and classroom curriculum is helping students learn about how solar energy works.

The Wyandotte administration is committed to reducing energy and operating costs in all of its buildings while improving comfort and investing in new technology. A grant from the state has enabled **Johnson Controls, Inc.,** in cooperation with the municipal utility, to install a 10-kilowatt photovoltaic system at Wilson Middle School.

In addition to sun power, the panels are generating interest in renewable energy as students learn about alternative fuel sources in their classes. Wyandotte eighth-graders are participating in the Academy of Solar Energy Education, an educational program developed by Johnson Controls and the National Energy Foundation.

The foundation trained three middle-school teachers, who now expand their lessons through hands-on science projects. For instance, to find out about the electromagnetic spectrum, students conduct experiments on how different colors and materials absorb solar energy. And video cameras mounted on the roof bring images of the solar panels directly to school laptops.

"Our children are growing up to believe they must do this, and I think having it as part of the school district and modeling it is essential," says Patricia Cole, superintendent, who is considering expanding the program districtwide.

Circle 156 for more information ■ freeproductinfo.net/asu

Circle 121 for more information ■ freeproductinfo.net/asu





Multifunctional table

SICO. The new 3-in-1 convertible table can be reconfigured easily to meet various applications: bench mode for auditorium seating; a single-unit bench with tabletop for testing and seminar applications; and a cafeteria table by linking two tables together. Front-mounted wheel locks are easy to engage, keeping tables securely in place when in use.

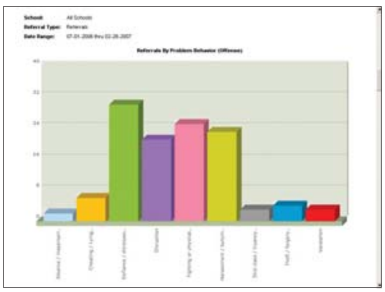
Circle 155 for more information ■ freeproductinfo.net/asu

CONTINUED...

Wall box controller

Watt Stopper/Legrand. The DRLV1 0- to 10-volt wall box controller can be used to dim or switch lighting loads or raise and lower shades. It is the first such device to include an input allowing automatic control by an occupancy sensor when used for lighting control. The device is RF-enabled and can be incorporated into a wireless scene-control system. When combined with a power pack, it can control up to 100 ballasts.

Circle 153 for more information
freeproductinfo.net/asu



Crisis management

PublicSchoolWORKS. The Custom Crisis Management Training Module enables institutions to create district- and school-specific courses that tie directly to a crisis-management plan and reinforces required periodic drills. The system, which is Web-based and automated, also sends out notifications of trainings due, reminders, and notices to administrators when employees fail to take and pass the courses.

Circle 154 for more information
freeproductinfo.net/asu

Efficiency goals

Alumni center reduces utility costs with HVAC upgrade



Jon McCombs, operations manager at the McNamara Alumni Center, has seen annual electrical energy savings of nearly $12,000 since the frictionless chiller was commissioned.

McQuay International. The McNamara Alumni Center at the University of Minnesota is designed as a campus showplace. With its granite-covered geodesic-shaped exterior and 85-foot atrium, the 231,000-square-foot structure, owned by University Gateway Corporation, Minneapolis, is a combined visitor and conference center, as well as office building for university staff. Because of its many functions, the center is open during day and evening hours and on weekends.

Despite its ultra-modern architecture, the building relied on a single 550-ton chiller for cooling during its first six years of operation. That's because the mechanical room was built for the single chiller only—leaving little room for chiller failures. An ultra-modern HVAC system had to wait until chiller technology was developed to the point where smaller machines with adequate capacity would fit in the room.

When frictionless chiller technology—with its small footprint—was introduced, Jon McCombs, Alumni Center operations manager for NorthMarq Corporate Solutions, the property management firm, recognized the opportunity to add redundancy to the HVAC system.

"When **McQuay** introduced the 300-ton frictionless chiller, it gave us both the size and small footprint we needed to redesign the HVAC system," says McCombs. "In addition to redundancy, our goal was to reduce energy and provide significant life cycle cost savings to the building's original chiller plant."

The result is that the 300-ton chiller runs about two-thirds of the time; the 550-ton chiller provides redundancy and carryies larger loads.

Circle 160 for more information ■ freeproductinfo.net/asu



Access control

Videx. Two new additions to the CyberLock family of access-control products are a Mini Keyport and the WebStation, which are used to pass information between the access-management software and electronic keys. The Mini Keyport offers another option for users that want to update keys from a remote location. It is durable and weather-resistant for outside installations. WebStation is a docking station for the CyberKey that can be used to connect directly to a desktop computer or to a network.

Circle 157 for more information
freeproductinfo.net/asu



Mail-processing solution

Neopost. The new IS Series of intelligent mailroom systems deliver enhanced productivity and sleek, ergonomic designs. With the ability to "load and go," manual sorting is eliminated; envelopes of various sizes and formats can be placed into the mixed-size, self-aligning feeder. Once the start button is pressed, mail is sorted by size, thickness and weight, processed, and automatically sealed at up to 150 letters per minute. Managing ink also is simplified with long-life cartridges featuring a "Click 'n Snap" design for faster cartridge insertion.

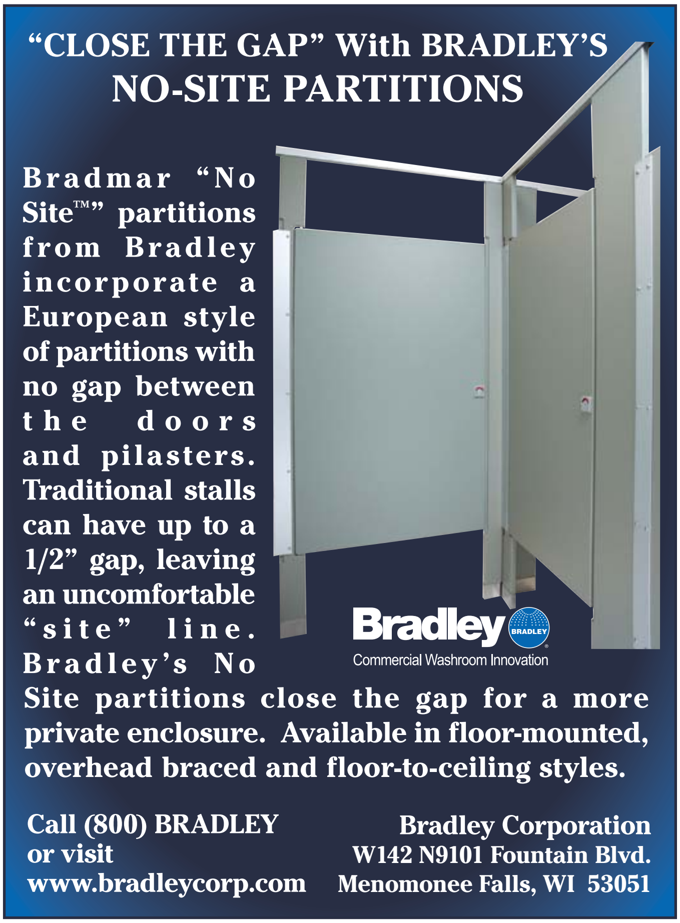
Circle 158 for more information
freeproductinfo.net/asu



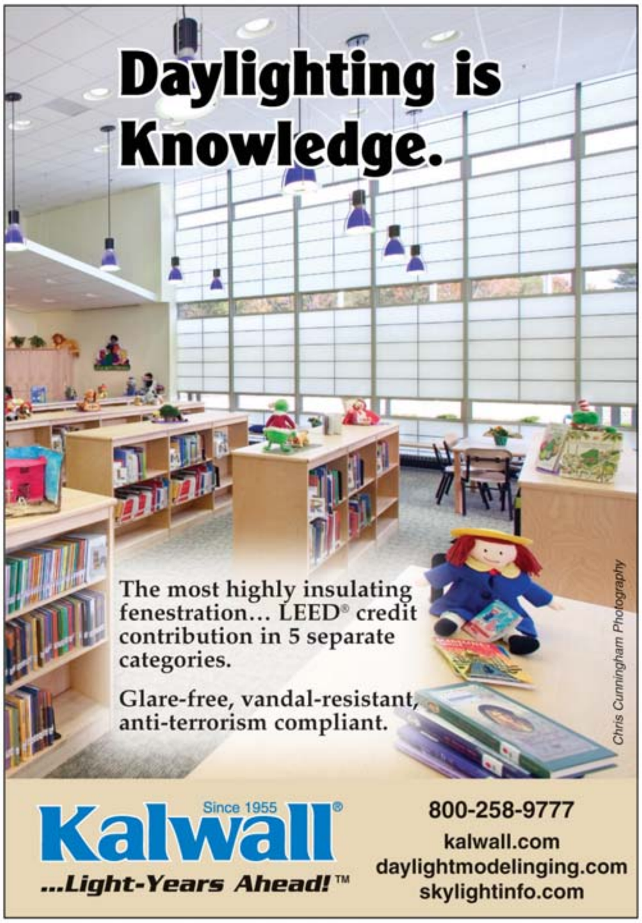
Online database

Firestone Building Products Company, LLC. The redesigned online Technical Database is designed to provide commercial roofing professionals with easier access to specification and installation information. The site, accessible at www.firestonebpco.com, provides key technical information, including guides, detail drawings, product data, quick specs, additional product application information and recent updates. New to the site are a search function, file cart, cool roofing section, and a tool where users can set up an account to subscribe to monthly site updates and view their download history. ■

Circle 159 for more information
freeproductinfo.net/asu



Circle 200 for more information



Circle 201 for more information



Circle 202 for more information



Circle 203 for more information

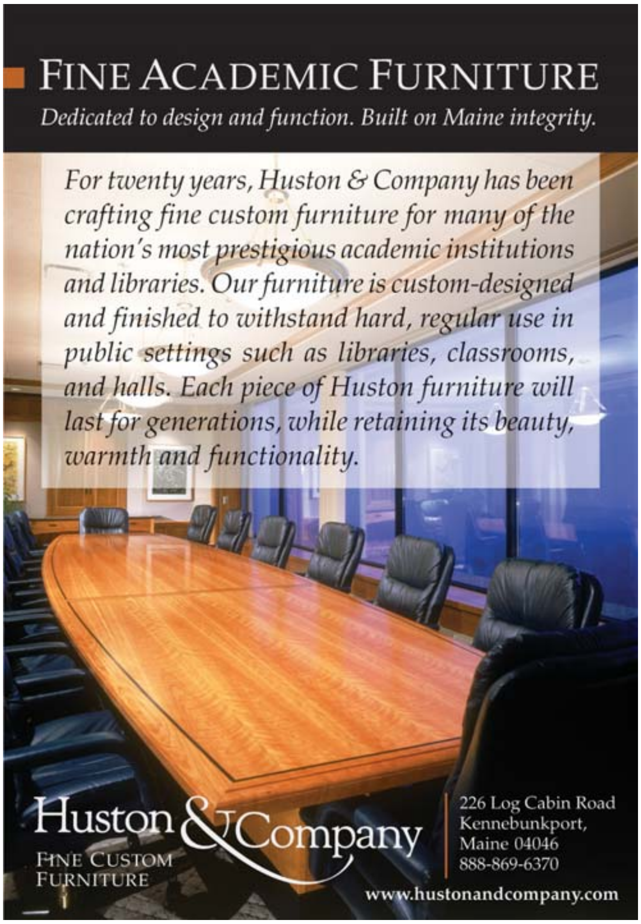
freeproductinfo.net/asu

Circle 204 for more information

Circle 205 for more information

Circle 206 for more information

Circle 207 for more information



Circle 208 for more information

At critical security checkpoints, it's CEIA at the front.



CEIA walkthrough, portable and handheld metal detectors offer a 100% detection rate, exceptional reliability, ease of installation and operation, and the highest level of throughput available—even at high security settings.

Featuring...

- The PMD2 Elliptic—high throughput with the minimum number of nuisance alarms. Meets International Security Standards.
- The 02PN20 Elliptic– the most advanced Programmable Metal Detector of its kind.

Call 888-532-CEIA ***www.ceia-usa.com***

CEIA® USA

GSA Contract Holder

CEIA USA An ISO 9001 Company CERTIFIED

Circle 209 for more information



New "UVC Kit for Unitary Air Conditioners" delivers high output germicidal energy to control mold and airborne microbial contaminants in dorm rooms, offices, etc. It installs easily in systems with coil sizes up to 15" H x 26" W. The device keeps coils clean to reduce HVAC energy use and eliminate chemical coil cleanings.

800-2STERIL ***www.steril-aire.com***

Circle 210 for more information

New DuraLite™ Commercial Lightweight Upright from Sanitaire



The DuraLite™ upright vacuum is the first true lightweight vacuum designed to withstand the rigors of daily commercial environments. Weighing only 10 pounds, it features a commercial grade motor and wider air path to eliminate clogging. DuraLite's magnesium parts provide superior strength and it deep cleans more than 30% better than the leading lightweight commercial upright.

To learn more, visit
sanitairecommercial.com
or call
1-800-800-8975

Sanitaire by Electrolux
Raising the level of floor care.™

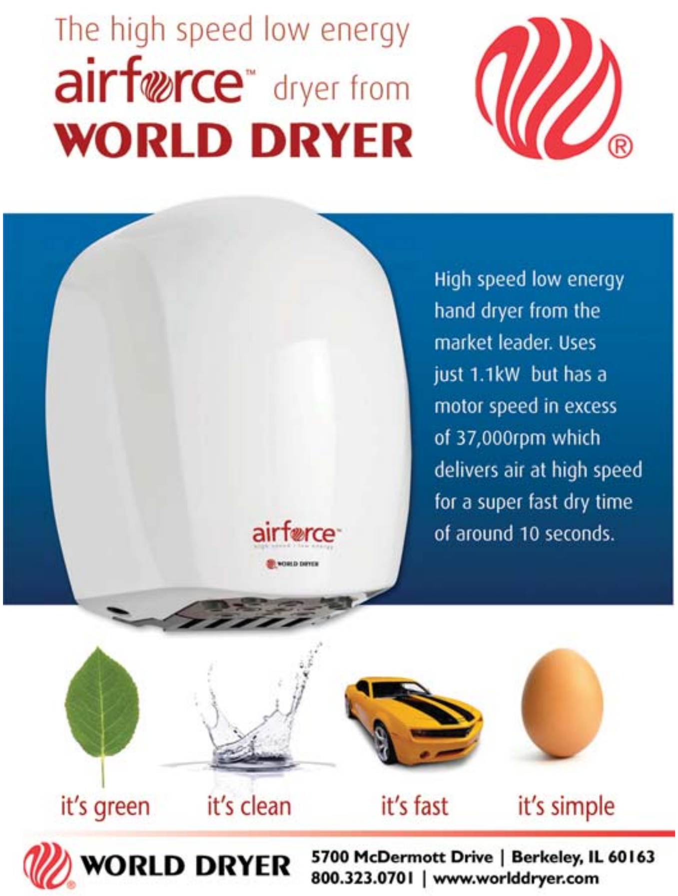
Circle 211 for more information



Circle 212 for more information



Circle 213 for more information



Circle 214 for more information



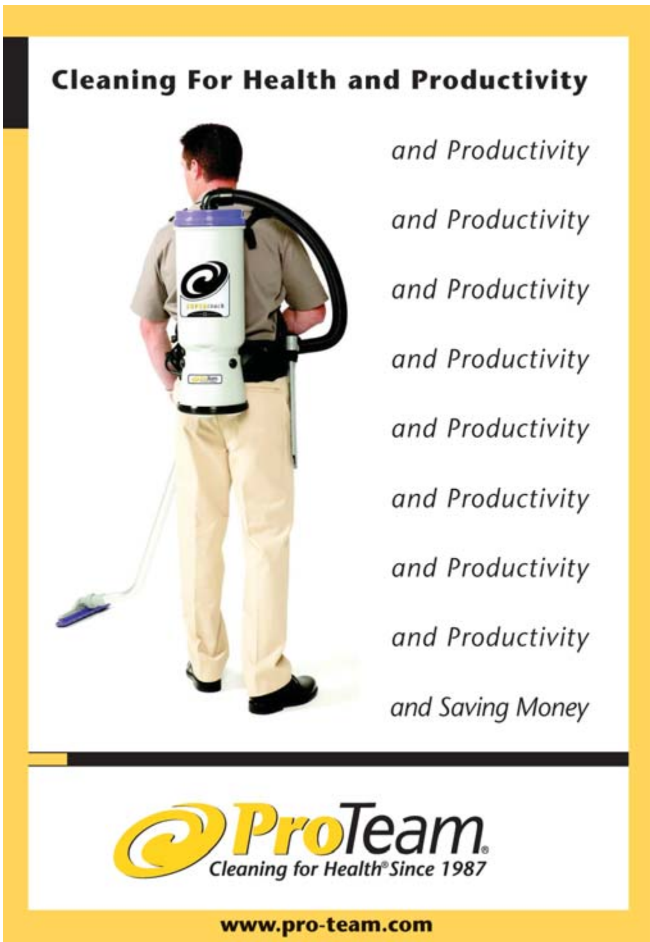
Circle 215 for more information



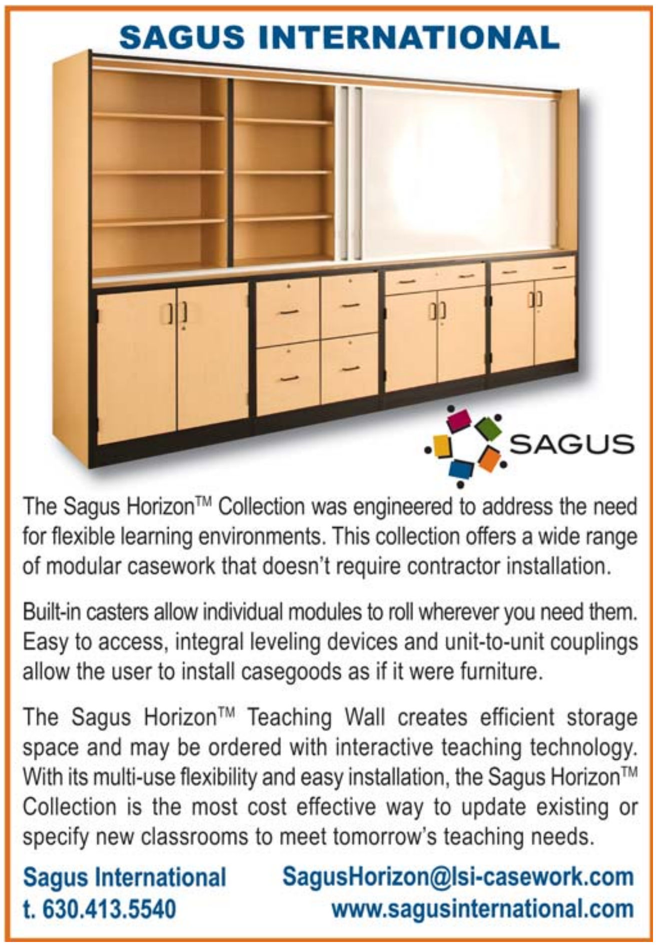
Circle 216 for more information



Circle 217 for more information



Circle 218 for more information



Circle 219 for more information



Circle 220 for more information





AD INDEX

For more information on products and services for education facilities and business, refer to the advertisements of interest and circle the corresponding reader service numbers on the free info card below.

SALES TEAM

West Coast Sales
Ron Levinson
7212 E. Whistling Wind Way • Scottsdale, AZ 85255
Phone (480) 473-4800 • Fax (480) 473-7008
ron@levinsonmedia.com

Serving: AK, AZ, CA, HI, ID, MT, NV, OR, TX, UT, WA, WY, Western Canada

Midwest Sales
Tom Nilsen
269 S. Old Creek Road • Vernon Hills, IL 60061
Phone (847) 634-0850 • Fax (913) 514-3969
tom.nilsen@penton.com

Serving: AL, AR, CO, IA, IL, IN, KS, KY, LA, MI, MN, MO, MS, NE, NM, ND, OK, SD, TN, WI

East Coast Sales
JoAnne Romanek
306 Shaker Lane • West Chester, PA 19380
Phone (913) 981-6132 • Fax (913) 514-6356
jromanek@asumag.com

Serving: CT, DC, DE, FL, GA, MA, ME, MD, NC, NH, NJ, NY, OH, PA, RI, SC, VT, VA, WV, Eastern Canada

Inside Sales
Gary Kazmier
6151 Powers Ferry Road NW, #200, Atlanta, GA 30339
Phone (770) 618-0374 • Fax (770) 618-0204
gary.kazmier@penton.com

Editorial Business Office: 9800 Metcalf, Overland Park, KS 66212-2216. (P.O. Box 12901, Overland Park, KS 66282-2901).
Phone: (913) 341-1300, Fax: (913) 967-1905, Website: www.asumag.com

American School & University (ISSN: 0003-0945) May 2009, Volume 81, Number 10, published monthly, with an extra issue in March, free to qualified persons in the United States, by Penton Media, Inc., 9800 Metcalf Ave., Overland Park, KS 66212-2216 (penton.com). Subscription rates: Free and controlled circulation to qualified subscribers. Non-qualified persons may subscribe at the following rates: USA: 1 year, $69, 2 years, $109; Canada: 1 year, $79, 2 years, $139; other international: 1 year, $99, 2 years, $159. For subscriber services or to order single copies, write to American School & University, P.O. Box 2100, Skokie, IL 60076-7800 USA; call (866) 505-7173 (USA) or (847) 763-9504 (Outside USA); or visit www.asumag.com. Periodicals postage paid at Shawnee Mission, KS and additional mailing offices. Canadian Post Publications Mail Agreement No. 40612608. Canada return address: Bleuchip International, P.O. Box 25542, London, ON N6C 6B2. **POSTMASTER:** Send address changes to American School & University, P.O. Box 2100, Skokie, IL 60076-7800 USA. Allow 6 to 8 weeks for change of address. Copyright ©2009.

Think GAIA
For Life and the Earth

SANYO





PLC-WXE45

Space-saving presentations from only 34-inches away!

Move the SANYO PLC-WXE45 closer to the screen and save some room. This compact (7.5 lbs.) projector with its short focus length lens can project a **widescreen 80"** image from as little as 34" away. That means large images in small rooms and few, if any, viewers blocking the projection with their shadows. The PLC-WXE45 with wide XGA (full 1280 x 800, 16:10), produces a bright 2000 ANSI lumens.

Monitor more than one PLC-WXE45 with SANYO's exclusive PJ-Net Organizer. Works on interactive white boards and offers blackboard or color board modes where screen options are few. All in all pretty nice. Some say it's the teacher's pet.

See Our Advanced Projector Technology at Infocomm, Booth #3200 and for Education at NECC 2009, Booth #2128.

Call today or visit our website for more information on SANYO's full line of critically-acclaimed projectors.

3LCD

SANYO. . . Providing More Projector Solutions

Toll free: 888-337-1215 www.sanyoprojectors.com

Circle 122 for more information ■ freeproductinfo.net/asu

